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In Memoriam

FRANK HAMILTON CUSHING

THE 305th meeting of the Anthropological Society of Washington was held as a memorial to Frank Hamilton Cushing, Vice-President of the Society, on Tuesday evening, April 24, 1900. President McGee opened the meeting with a brief tribute.

Remarks by W J McGee

On the day of our last meeting, April 10, 1900, the life and work of our late associate and Vice-president, Frank Hamilton Cushing, came to an end; and in response to wishes expressed by several of our members, this meeting of the Society is devoted to his memory.

Cushing was a man of genius. The history of the human world has been shaped by a few men; the multitudes have lived and worked and ended their days as woof-threads in the great pattern, while the warp has been carried forward through the generations and raised to ever higher and richer breadths by the relatively few leaders of action and thought; and such leaders are the geniuses of their successors if not of their associates. It is in this noble class that Cushing was placed by those who knew him best; he possessed that flame and shed that subtle light of genius that illumined whatsoe'er he touched, and guided his own feet as well as those of others in the way of progress. So he was a leader, not in physical force, not as a formal teacher, not even in the spontaneous election of his fellows, but in that clearness of insight into things for which all men strive under the stress of intuition. The world is better and wiser because of Cushing's life in it.

Most of the geniuses who have shaped the history of later

millenniums shone as intellectual luminaries alone : Cushing stood out not only as a man of intellect but, pre-eminently, as a master of those manual concepts to which he gave name as well as meaning—indeed, he might fittingly be styled a manual genius. There are two sides to man, two correlative and reciprocal aspects—the hand side and the brain side. Human development begins in the child, and began in our earliest ancestry so far as we are able to think, chiefly in the perfecting of the hand ; for throughout the human world men *do* before they *know*—indeed, the greater part of knowing is always preceded by generations of doing. So humanity's dawn was doubtless brightened through manual genius ; then came those later millenniums in which the brain side of man rose into dominance and illumined progress—and this was the time of intellectual geniuses. Of late science has arisen, and men have turned to the contemplation of nature and have been led thence to the conquest of natural forces ; in the strife against dull nature, the manual side of man has again come into prominence, and the pages of later history are emblazoned with the names of inventors and experimentalists in whom the hand side and the brain side have attained perfect union. To this class of men Cushing belonged ; yet the application of his genius was peculiar, even unique, in that his efforts were expended in interpreting inventions by others rather than in making inventions of his own. This application of his powers rendered him successful beyond parallel in retracing the paths pursued by primal men in their slow advance toward manual and mechanical skill ; and it was through this peculiar application that Cushing's richest contributions to the Science of Man were made.

By reason of his peculiar insight into primitive devices and motives, Cushing was a teacher of his associates, even of those whose years were more than his own. His mind flashed and scintillated under the impact of new sights, new sounds, new thoughts ; hence he was fertile in hypothesis, fruitful in suggestion, an avant-courier in research, an intuitive interpreter of

things. All his associates profited by his originality, and learned much of him ; I learned more from Cushing than from any other investigator save one ; and my debt to him is no greater than that of many other students.

We mourn today the untimely death of an honored and beloved associate, a man of genius whose place can never be filled.

Remarks by William H. Holmes

Our lamented friend and associate, Frank Hamilton Cushing, was born in the little village of Northeast, Erie County, Pennsylvania, July 22, 1857. At birth he was a mere mite of humanity, weighing only a pound and a half. For a year or two he grew but little, and was kept always on a pillow ; but it is said that his mind developed more rapidly than his body—that in after years he could remember faces seen and aches felt before he was able to form words or to move from his place on the pillow.

When he finally got a start he was so tiny and weak that he found no place among the hardy and boisterous brothers and sister, and sought to avoid them and be alone. Even thus early the characteristics of his unusual personality began to take form. When he was three years of age the family moved to Barre Center, New York.

Cushing's initiation into the delights of archeological research took place when he was nine years of age.

When he was big enough to contrive and construct he built himself a miniature ship and mounted it on wheels, and one of his most memorable experiences with an unsympathetic environment was the emphatic displeasure of his parent who found him sailing his craft over the waving surface of a neighboring field of young wheat.

When he began to read, a new world opened to him. He found but few books in his father's house, aside from medical works, and one of his early recollections was that of building up a pyramid of boxes and other articles high enough to enable him

to remove the volumes from the shelves. Among the books he found a dictionary, which proved a great mine to him, and no doubt had marked influence upon his subsequent career. Every evening he consulted this book, seeking the new or difficult words that came up during the day, and these studies were often continued far into and even through the night. His schooling was rather meager, and by far the larger share of his education was obtained by reading and study along the few lines that offered themselves to the ambitious boy.

His physical weakness and distaste for the boisterous companionship of other children drove him more and more into solitude, and he found his keenest pleasure in the fields and woods. His imagination more than kept pace with his general development, and he invested his surroundings with extraordinary qualities and powers much as do the primitive tribes of which later he became a chief student. He made himself an Indian costume, and armed with improvised weapons wandered in the deep woods where he remained far into the night,—in fact until morning broke,—hiding his paraphernalia during the day that it might not fall into piratical hands. As he wandered he talked to the trees and rocks and to the moon, and was fascinated by the solemn mystery of the night. He fairly worshiped the forest trees, and, conceiving the idea of having one of these that he could call his own, bought one for a small price from his cousin—not a tree he could dig up and carry away, but a big tree in the woods where he could come and under its somber shade dream and talk and sing, and imitate the sounds of bird and beast at will. This was his trysting-place with Nature.

Then he took to carrying his beloved dictionary with him in these lonely wanderings, and he carried it always on his head down the roads and lanes and through the forests of beeches. He carried it thus so frequently and persistently that his body became straight as an arrowshaft and lithe as the young saplings, his brothers; and from this dictionary he preached his sermons

to his elder brothers, the trees. The child was so near Nature that he conversed with her without fear of misunderstanding, a relation not existing with any human creature.

Naturally this child was not well understood by the matter-of-fact people of Barre Center, and some suspected that possibly his converse with inanimate things meant some mental weakness, while others feared he might be possessed of uncanny powers. His imagination was vivid, and possibly at times fantastic, but there were many to keep his wanderings within bounds. At one time he conceived the notion that he might fly, and to aid in the flight constructed himself wings made of a light wooden frame covered with paper or cloth. He told me this twenty-five years ago, laughing gayly at the recollection. He conceived that in some way strong faith in his power to fly would help the rather shaky wings. He climbed to the barn loft, and, appearing at the wide doorway, adjusted the wing-fastenings, gave a few preliminary flaps, and boldly spread his pinions for flight ; but the faith was not strong enough, and he came down with terrific force. Although no bones were broken, the flying habit was very thoroughly broken — but this, he added ruefully, did not deter his irate father from breaking it again.

A traveling lecturer came to the village and talked to the people about geology. The boy was thus initiated into a new field, and became a collector of geologic specimens as well as of Indian relics ; and he now longed to wander into remoter regions. But travel was difficult without money, so he sought work, and by pulling beans for the neighbors accumulated enough to set out on his journeyings and adventures. His limit of expenditure was ten cents per day. He reached the shores of Oneida lake, and finally got hold of a clumsy boat heavy enough for four strong arms to manage ; but the lad was not daunted, and without outfit or food began the navigation of the lake and the search of its shores for all kinds of specimens. Late one evening he was overtaken by a thunder-storm and his boat was driven upon the swampy shallows ;

across these in the darkness he finally found his way to solid land and sought shelter. Drenched to the skin and weak from lack of food, he knocked at the door of a farmhouse. The frightened family refused to open the door, but when the good mother of the house got a glimpse of the wanderer through the blinds she cried, "Why, it's only a little boy," and he was taken in and fed and put to bed. But he did not always fare so well, and from other places was chased by the dogs or turned away brutally as a lunatic or tramp. But he never gave up, and in spite of wrecks and rebuffs came home laden with valuable collections.

At about this period Cushing met George Kennan and visited him at his home in Medina. Kennan helped and encouraged him, and the boy worshiped Kennan in return.

Then he came to know Lewis H. Morgan and received new inspiration from his conversation and writings; and on one of his excursions he found another friend. Happening in the vicinity of a country residence he came upon a large boulder from which protruded a fine trilobite. Rushing to the house to seek a hammer, he encountered a man working in an outhouse. This person was the late Mr L. W. Ledyard, and in response to the boy's inquiry, he begged to know for what the hammer was to be used. When told that it was to break out a large trilobite from a rock near by, Mr Ledyard replied that the stone had been brought to the spot at the cost of much labor and that the trilobite was the particular attraction; "but," he added, "I will take you to the place from which this specimen came, and there you can gather trilobites to your heart's content." This was the beginning of a warm and helpful friendship to young Cushing.

At the age of eighteen Cushing found his way to Ithaca, and at Cornell University sought Prof. C. F. Hartt, geologist, and a well-known student of archeology. The Professor was in his workroom, stretched out upon a table suffering from an attack of malaria. The boy introduced himself, but was not especially welcomed, and when he broached the subject of Indian relics and the

search for them in the neighborhood, he was told brusquely that there were none, for Hartt and his students and the farmers about Ithaca had looked for them in vain. "But," replied Cushing, "there are Indian relics everywhere, and I can find them; I can find plenty of them right over there on that point of land." The Professor did not believe it, and suggested that the lad had the privilege of proving his assertion. So Cushing set out without delay and in a few hours returned with a sack full of implements. But by this time he was thoroughly exhausted from hard work and lack of food (for either he had no money with which to buy food or had forgotten to eat), and he climbed the hill to the college with great difficulty. Finally, reaching Hartt's place, he staggered in and began to empty the contents of the bag upon the floor. "Stop!" shouted the Professor, astonished at what he saw. "What are you doing? Take care of those things; bring them here to the table." He was not only surprised at the ample proofs brought so promptly, but when he looked again at the boy he was deeply impressed with his exhausted and pitiable appearance. "Here, Darby," he cried to his assistant, "take this chap and give him something to eat."

Thus Cushing made himself a place in this great center of learning and soon afterward returned to take a special course of study under the supervision of Professor Hartt.

Remarks by F. W. Powell

The father of Frank Hamilton Cushing was Thomas Cushing, a practicing physician and a man of learning, who gradually retired from the practice of medicine and devoted himself to the study of philosophy. While yet but a lad Frank Cushing began to make collections of stone implements and other prehistoric artifacts, which are abundant in the northwestern part of New York; and he made excursions far and wide along the shore of Lake Ontario and southward to the Finger lakes and westward to Lake Erie in pursuit of this study. He was known as a studious

boy, and in this he was greatly encouraged by his father, who perhaps did not fully sympathize with him in his study of archeology and who doubtless thought that his zeal in this respect was an idle sport. An intelligent neighbor, who was not quite so absorbed in metaphysic as Dr Cushing himself, became deeply interested in Mr Cushing. This gentleman, the late L. W. Ledyard, was an acquaintance and friend of Professor Baird, then Assistant Secretary of the Smithsonian Institution. Through his representation the Professor was induced to request young Cushing to write an account of something of interest which he had observed in the archeology of western New York. At this time he was but seventeen years of age, but he prepared a statement in a letter to Professor Baird which was published in the Report of the Smithsonian Institution for the year 1874. This letter foreshadows the genius which in subsequent years we have found Frank Hamilton Cushing to be. It shows that at this early age he was an acute observer and an apt reasoner. He knew how to observe significant facts and to compel them to tell their story.

The collections made by Cushing at this time had already become extensive, and his father finally became intolerant of their presence in the homestead, as they occupied so much room and were the source of much disorder. So our young man built for himself a wigwam on a retired part of the farm, which he made his museum and laboratory. Ultimately the collection came into the possession of the Smithsonian Institution. The wigwam and its surrounding structures were indeed a scientific workshop in which young Cushing laid the foundation of a system of investigation which has since proved of marvelous efficiency and which has been successfully developed by other laborers.

This new method of research in prehistoric archeology I shall call the method by experimental reproduction. At this early date Cushing began a series of trials to discover, if possible, the method by which the aboriginal inhabitants of this country had produced their artifacts. For this purpose he learned to chip

stone knives of materials which can be wrought in this manner, and to fashion other materials which must be wrought by battering and grinding. He soon became expert in making arrowheads and many other classes of stone implements out of the various materials which he found on his travels through the state. He also experimented on the making of pottery, on the weaving of baskets, and the making of utensils from birch-bark, and especially upon the construction of canoes from birch-bark and of logs through the agency of stone tools and fire, for he prided himself on reproducing the Indian arts by only such means as he supposed they were able to command.

It was by these experiments that he discovered the significance of the beaver teeth found so extensively in the village sites of the region. He found that a beaver tooth made an admirable carving tool. In later years he discovered many other carving tools, especially those of sharks' teeth found elsewhere in the United States. One of the remarkable discoveries made in this forest workshop was the method by which the Amerinds wove their rush mats. First he obtained a sample and then set his wits to work at the problem of its manufacture. The rushes which constitute the woof could not be handled in a shuttle, and the ordinary device of the hand-loom he supposed to be beyond the art of the Amerinds. Then he devised a new method of weaving such fabrics. He cut into lengths the warp which he desired to use, using ordinary twine for experimental purposes; then he made two stiff rods which he placed upon two sawhorses, so that they were parallel and about six inches apart. On this framework of rods he placed his strings of warp, one end over each pole, so that the middle portion of the string fell down to the ground, while the ends of the string turned over the poles. Then he attached to either end of the string a stone weight, and having a succession of warp-strings distributed at intervals along the poles, he placed several rushes upon the warp-string between the rods, then taking the ends of the strings with their weights

one in either hand, he crossed them, and then left them to again hang down over the rods. Having crossed all of the warp-strings in this manner, he again placed one or more rushes over the first bundle on the crossed string of the warp, and continued this process until the rush mat was completed. Prior to this time these warp-weights had been found widely distributed over the United States and were considered to be plummets or sinkers. You will find them still labeled in this manner in most collections. But Cushing was not sure that he had yet found the purpose of these so-called sinkers until in after years he found them used in this manner in the Far West. I have myself seen them used as warp-weights by the mat-makers of California.

It was in this workshop of technologic investigation that Cushing gained that marvelous skill in handicraft for which he became so well known among ethnologists, and which ultimately led to the preparation of his paper on *Manual Concepts: A Study of the Influence of Hand-usage on Culture-growth*.

At the age of eighteen he went to Cornell as a special student of natural science, continuing from time to time his local studies of village sites in New York. In 1876 he was given charge of a portion of the National Museum collection at the Centennial Exhibition at Philadelphia. In 1879 I called Mr Cushing into the service of the Bureau of Ethnology. Nine years before I had visited Zuñi and the pueblos of the ancient province of Tusayan. There I had observed the marvelous savage and barbaric culture presented in the Pueblo region, and witnessed several of the ceremonies performed by its people. The memory of these strange sights haunted me, but I was never able to return to these investigations, and more than nine years passed before I could find some one else to enter upon the examination of this interesting subject. In 1879 Mr Cushing was employed in assisting Colonel Stevenson in making a collection of Pueblo artifacts, and this was continued in the subsequent year. I went myself with Colonel Stevenson and Mr Cushing into the field and took

occasion to have many conversations with the latter about the wonderful things which I had witnessed in 1870. I told him that I had long held it in view to have some one to investigate the subject. Through these conversations he became deeply interested in the sociology as well as in the mythology and religion of these people, and he finally concluded to stay at Zuñi and see if it were not possible to be initiated into the mysteries of the life of the people. Many travelers had already seen the strange pueblos founded on rocks in the midst of the desert, and had learned all that could be learned without becoming a member of a tribe and learning its language. But Cushing decided that he would do everything necessary to make the intimate acquaintance of the people by learning their language, and, if possible, to gain admittance into the tribe and to become a member of one or more of their religious fraternities. So when we turned away from Zuñi we left Frank Cushing among the people. He soon ingratiated himself into their good will and was adopted into one of their clans,—the Macaw,—and the sacred name “Medicine-flower,” borne by only one person in a lifetime, was given him. Then he was initiated into one of their leading fraternities. From month to month and almost from week to week he rapidly gained in knowledge of the Zuñi language, so that early the next year he wrote me that he had won a place in the esteem of the people and was confident that he could earn that promotion which seemed to him necessary in order that he might fully understand the nature of their government and especially the character of their religion. He found no difficulty in gaining knowledge of their mythology, but he found that they were very loath to reveal the secrets of their religion. At last success crowned his labors, for within a year he could speak the language, was the second chief of the tribe, and was promoted to a leading position in one of the most important of the fraternities—the Priesthood of the Bow. To accomplish this end it had been necessary for him to live with

the people. He lived in the family of the governor; he adopted the native costume, ate native food, never spoke a word of his mother tongue, but assiduously cultivated the speech of the people, until finally he took part in their councils and in their sacred ceremonies.

For five years Cushing led this life, returning to civilization but once, when he brought a party of Zúñi natives east, visiting Boston and other large cities of the Atlantic coast. Everywhere he, with his party, was warmly received by the people, and the poor Zúñi, who could not speak a word of English, were yet indoctrinated into the ways of civilization by those object lessons which Cushing was able to conduct for them. When he with his Indian chiefs returned to their home in the desert, Cushing's power over the Zúñi was firmly established.

In looking back over the history of these times one cannot but admire the leadership which Cushing displayed. While as a student of ethnology he was engaged in learning the characteristics of Zúñi religion, in recording their mythology, and in becoming deeply versed in their methods and principles of government, he at the same time led the Zúñi to look with favor on the ways of civilization and laid the foundation for radical changes in their life, so that today all of these Pueblo peoples of Zúñi and Tusayan are on the highroad to American civilization. They have become interested in modern agriculture, have practically abandoned many of their ancient customs, and are largely clothed as white men; they have consented to the establishment of schools in their midst, and are anxious for their children to learn English; but above all they are steadily abandoning their ancient religious ceremonies, and the new generation, with the gift of English speech, will soon accept the boon of Christianity.

These years in the desert, these years of life among savage men, these years of toil and privation, were busy years to Cushing, who pursued his ethnologic investigations with unflagging zeal. First, he gained a thorough knowledge of their language,

for he was deft in the acquisition of speech ; at the same time he gained a thorough knowledge of the nature of the government of the Zuñi, took part in it himself, and became an influential man in their councils. With his skill in handicraft he became an expert in all their labors, and there was nothing that a Zuñi could make which he could not produce with greater skill. In the mythology of the people he became a pundit, and in their religious ceremonies he was more learned than the high-priest himself.

From 1886 to 1888 Mr Cushing organized and conducted archeologic research in the Salado and Gila valleys in Arizona, in charge of the Hemenway Southwestern Archeological Expedition, which was generously endowed by the late Mrs Mary Hemenway of Boston. In 1888 he made extensive excavations in the ruins of the "Seven Cities of Cibola" which had been discovered and identified by him seven years previously.

His health gave way, the privations of his life at Zuñi had undermined his constitution, and he was compelled to return to the East for medical advice. After many vicissitudes and much suffering he finally consulted Dr Pepper, of Philadelphia, under whose treatment he partially recovered. Then Dr Pepper came to Washington for a consultation with me about the future course of life which Cushing should pursue. He recommended that he should go to Florida for a few months, at least, and perhaps for a year. Dr Pepper offered to raise the money to defray the expenses of an exploring expedition in the everglades and keys of the extreme southern portion of that peninsula. The expense of the expedition was borne in part by Dr Pepper himself, but chiefly by Mrs Phoebe Hearst. The discoveries made by Cushing on this expedition were of great interest and of profound importance in American archeology, and at his death he had nearly finished a voluminous report on his discoveries.

Cushing was a man of genius. He not only had the zeal for labor and the gift of untiring toil, but he had the genius for the interpretation of facts. In his association with men he was

always kindly and courteous; everywhere he made friends, and when he made one he could never again sever the bond. He loved his wife, who shared with him the dangers and privations of the wilderness. From the time that we first went together to Zúñi until the day of his death he was my companion and friend, and I loved him as a father loves his son.

Remarks by Alice C. Fletcher

My acquaintance with Mr Cushing dates from the spring of 1882. He had come to Washington with some of his Zúñi friends on his first return East from his ethnologic researches in the Southwest. I was also just from my studies in the homes of the Indians in the Missouri valley, having left them to plead before Congress the cause of a tribe that was threatened with the loss of its ancestral lands. Mr Cushing and I, all unknown to each other, had been doing our work in the same manner, both going to live with the natives, accepting the natural conditions and merging ourselves, as far as possible, with the people, that we might learn their social organization, customs, and religious rites. This similarity of method and experience could not fail to make our first meeting one of peculiar interest, and the acquaintance thus begun soon ripened into companionship and a friendship that, as the years passed, grew in strength and helpfulness.

Rereading some of Mr Cushing's papers printed during the last ten years, I have noted with delight that they preserve much of his personality and illustrate his peculiar wealth of mental imagery, so that the man whom we have known may yet be known to those who are to come after us.

The keynote of Mr Cushing's personality seems to have been an unconscious sympathy. It dominated his elastic step and erect carriage, as he came and went, never intruding, and always meeting one with a smile that started from the eyes and spread over the kindly face. It governed his speech and the choice of his language; it controlled his methods of research and was the

master key that unlocked so many secrets to his deft hands and keen vision. Hear his words, spoken in 1895, when making his address as Vice-president of the Section of Anthropology in the American Association for the Advancement of Science :

“ Well-nigh all anthropology is personal history ; even the things of past man were personal, like as never they are to ourselves now. They must, therefore, be both treated and worked at, not solely according to ordinary methods of procedure or rules of logic, or to any given canons of learning, but in a profoundly personal mood and way. If I would study any old, lost art, let us say, I must make myself the artisan of it—must, by examining its products, learn both to see and to feel as much as may be the conditions under which they were produced and the needs they supplied or satisfied ; then, rigidly adhering to those conditions and constrained by their resources alone, as ignorantly and anxiously strive with my own hands to reproduce, not to imitate, these things as ever strove primitive man to produce them. I have virtually the same hands he had, the same physique, generally or fundamentally the same activial and mental functions, that men had in ages gone by, no matter how remote. If, then, I dominate myself with their needs, surround myself with their material conditions, aim to do as they did, the chances are that I shall restore their acts and their arts, however lost or hidden ; shall learn precisely as they learned, rediscovering what they discovered precisely as they discovered it. Thus may I reproduce an art in all its stages ; see how it began, grew, developed into, and affected other arts and things—all because, under the circumstances I limit myself to the like of,—it became and grew and differentiated in other days.”

His entrance into this method of training is told in his own picturesque way. He says :

“ When I was a boy less than ten years of age, my father’s man, while plowing one day, picked up and threw to me across the furrows a little blue flint arrowpoint, saying, ‘ The Indians made that ; it is one of their arrowheads.’ I took it up fearfully, wonderingly, in my hands. It was small, cold, shining, and sharp,—perfect in shape. Nothing had ever aroused my interest so much. That little arrowpoint decided the purpose and calling of my whole life. . . . I treasured that small arrow blade on the lid of an old blue chest in my little bedroom, until the cover of that chest was overfilled with others

like it. . . . When nearly fourteen years of age I discovered in the woods south of Medina, New York, an ancient Indian fort. I built a hut there, and used to go there and remain days at a time, digging for relics when the sun shone, and on rainy days and at night in the light of the camp fire, studying by experiment how the more curious [of the relics] had been made and used."

In these early experiences we see the lad led by his unconscious sympathy into an environment and adopting conditions that laid the foundation for his future triumphs in technologic skill.

The peculiar wealth of his mental imagery was germane to his personality. To him everything was alive; nothing was dead or incapable of responding to his vital touch. Like these spring days, when every twig and bough and buried root is sending forth in unmeasured profusion tokens of the life hidden within it, so, in the atmosphere of his mind, the crude ceremony, the archaic thought, the mnemonic symbol, each and all gave forth to him the secret meaning which through them was struggling for expression. His unconscious sympathy, his abounding mental vigor that pain and years of suffering could not quench, made him a master in reading the thoughts of the race he studied.

As an example of his divining power I will mention an incident of recent occurrence:

Mr Cushing had been studying the symbolic use of birds in connection with ceremonial objects among the Indians, both ancient and modern. A year or two ago I called his attention to the manner in which the woodpecker was treated on the sacred peace calumet: its upper mandral was turned back upon the crest. This aroused Mr Cushing's interest; we talked of it again and again when we met. At last he said, "I have been looking for the evidence of similar treatment, and I think I have found out the reason." Rising and walking rapidly, he stopped suddenly, and said: "I *know* why they turned the mandral back,—it was to prevent the crest from rising, to show that the bird could not be angry; he must serve the cause of peace."

Not long afterward an old priest (of a tribe unstudied by Mr Cushing), the keeper of a rite in which these peace calumets are used, gave me the ritual. In speaking of the woodpecker, he said, "The mandral is turned back upon the red crest of the bird that it may not rise; he cannot become angry,"—a singular confirmation of Mr Cushing's power of thinking his way along the lines of aboriginal thought.

To him the unseen was the real. He was busy, not with externals merely, "but rather," as he has said of his work, "as to how and why they became at all, . . . of the laws and principles which have governed man's development under all sorts of circumstances and in every age and land."

Remarks by Washington Matthews

Of the many remarkable achievements of Mr Cushing, there is none, perhaps, so remarkable and so fruitful in its results as his excavations in the Salado valley in Arizona—the work of the Hemenway Southwestern Archeological Expedition.

This work, begun in 1887, was the first systematic effort ever made to excavate the wonderful ruins of the Southwest within our borders. For over three hundred years the existence of such ruins had been known to civilized man. During the forty years of American occupancy which preceded Cushing's labors, ruins in Arizona and New Mexico had been often sketched, photographed, described, modeled, surveyed, and superficially examined; but no one had undertaken to dig into them.

A famous American archeologist said to me in 1880 that he did not consider excavation necessary to the study of Pueblo archeology. He has learned better since, and largely through the example of Mr Cushing. If such was the opinion of one of the high-priests of American archeology, can we blame the lesser lights and the uninitiated laity for their ignorance and indifference?

But there were some practical reasons why explorations in the

Southwest were long deferred: much of the land was held by hostile Indians who have been but recently subdued; and the country was difficult of access before the railroads were built. Money for the costly purposes of excavation was not to be procured; American scholars were interested in the Old World, and so, of course, were the wealthy patrons whom they influenced.

Slowly have our scientists come to discover how dense was their ignorance of things American. Mr Cushing has told me the following very characteristic tale of a Washington archeologist, now deceased:

When he heard that his young friend was going to Zuñi to study the ethnology of its people, he said: "Mr Cushing, I understand you are going to Zuñi. You will stay there perhaps a month, perhaps two or three months. While you are gone I will consult my authorities" (waving his hand grandly at his well-filled book-cases), "and when you come back, I will write a better book than yours." Thus we see that one of the foremost of our students of American antiquities believed that the crude work of the few hasty travelers who had visited Zuñi contained all that could be known about its people, and that a few months would suffice Mr Cushing to learn all that he needed to know. He remained five years, learning something new every day to the last.

In studying the mythology and religion of the Zuñi people, Mr Cushing felt that something was lacking. He found allusions to many things which the present life of Zuñi could not explain. The nature of these problems, and the way in which our explorer believed he had solved them by means of excavation, have been explained by him in a paper read before the seventh session of the International Congress of Americanists at Berlin in 1888, and published in the *Compte Rendu* of the Congress. We have not time to give the details. Let it suffice here to say that he became convinced that by exploring ruins far to the southwest of Zuñi he might find a key to the mysteries, and he determined to seek it there.

To the ordinary investigator this might seem the errand of a madman. The land southwest of Zúñi is a vast wilderness filled with ruins and other ancient remains. The proverbial needle in the haystack might seem as easy to find as his key. But he was a man of rare intuition who beheld clearly what others saw only as "through a glass darkly." The intuition which guided him to his wonderful discoveries in Florida, from the contemplation of a single specimen brought from there, had, before this time, guided him to other discoveries.

But where should he obtain the money for his costly investigations? Here fortune and perhaps his own eloquent tongue assisted him, and a wealthy, patriotic lady of Boston, Mrs Mary Hemenway, came to his aid with abundant means, and he set out for the Southwest on his "wild-geese chase."

In February, 1887, he arrived with a party of assistants in the neighborhood of Tempe, in the valley of Salt river, or Rio Salado, in Arizona. At first he worked in the uplands on some stone ruins of a kind widely distributed over the Southwest, without finding anything unusual or discovering the clews he sought. While thus discouragingly employed, he learned of a large earthen mound, some nine miles from Tempe on the bottom of Salt river, and he proceeded to dig here and in the vicinity. The structure, which was an irregular rectangle, rudely terraced, seemed an earthen mound such as was once common in Mississippi valley; but being excavated it was found to be the remains of a great clay building, of many stories, similar to the long-known Casa Grande, some 35 miles distant in the Gila valley. The flood-plain surrounding the mound, overgrown with mesquite trees and sagebrush, showed to the untrained eye no evidence of former habitation; but the eye of our explorer saw abundant evidence in the shape of potsherds and other products of human labor. He set his workmen to digging, and they soon exposed numerous foundations of earthen walls. The party camped beside this mound all summer and excavated until they

exposed the remains of an ancient city, some six miles in length and from half a mile to a mile in width. This place he named *Pueblo de los Muertos*, or, briefly, *Los Muertos*, the "Town of the Dead," from the great number of skeletons which he exhumed there. Subsequent excavations revealed many other cities as large as this or larger, and in all these there were skeletons; but he retained the name of *Los Muertos* for the first, and found other appropriate Spanish names for the remainder. Thus on his maps we find one ruined city named *Los Hornos*, "The Ovens," from the number and good preservation of the bread ovens found there; another called *Las Acequias*, from the number and good condition of the *acequias*, or artificial water channels, there seen; a third named *Los Guanacos* because in it he found many pottery images of an animal which he could not identify with any now inhabiting Arizona, but which he thought resembled some of the *Camellidæ* of South America—the vicuña, llama, or guanaco. I may here mention that he found in many houses collections of spherical stones which he thought might be the remains of bolas such as the South Americans use, and he found rock inscriptions which he thought might represent llamas and hunters casting the bolas.

There is not sufficient space to enter into many of the details of his great work; a few of his results only can be mentioned.

Besides the first great clay building or *casa grande*,—priest temple he called it,—the remains of many more of these stupendous buildings were found (in one city there were seven), and he found in these some mythic relations to the estufas or kivas of modern Zuñi. The temples were made of mud, covering a core of wicker-work. They were, in fact, great mud-covered baskets.

He found another class of great buildings that were apparently used for public games and ceremonies, which he called sun-temples. Each, consisting of a single chamber, was elliptical in form, rounded on top, not so lofty as the priest temple but covering a greater area. One measured 150 feet in width by over

200 feet in length. It is thought to have resembled, when in use, an inverted, elongated unburned earthen bowl.

But perhaps the most notable work of the ancient Saladoans was their system of irrigation. The land of which we are speaking is a hot desert flood-plain surrounded by sterile, woodless mountains. No crops can be raised without abundance of irrigation, and as the ancient Saladoans lived almost exclusively on the products of their fields, they had to employ with great care the waters of Salt river. The *acequias madres*, or mother canals, were traced for a distance of over 150 miles, notwithstanding the drifting sands of centuries had done much to obliterate them. Their remains were found at distances of fifteen or twenty miles from the bed of the river from which they derived their water. They were deep and broad enough to be used for purposes of navigation. The great timbers brought from pine-clad mountains fifty or sixty miles away and used in constructing the temples were probably rafted to their destination on these canals. Crops were moved upon them. There are localities where the old beds are used today by the white settlers for wagon roads. In one place, near the present Mormon settlement of Mesa City, about ten miles from the ruins of *Los Muertos*, an ancient canal was dug through a hard rocky layer. The Mormon community made use of the prehistoric cut when constructing their own irrigating ditch. I have heard on good authority that the Mormons estimate the saving made by using this cut at twenty thousand dollars. It would be difficult to estimate the equivalent of this in human hands and days of labor, when the stone ax was man's best implement, when man was his own beast of burden, and when he had no better way of removing the débris than that of gathering it in his hands, loading it into a basket, and bearing it away on his shoulders.

Pottery, finely finished and elaborately decorated, was found in great abundance. Much of it was in perfect condition. Some had been buried with the dead; some had been used as funeral

urns to contain the ashes of the cremated. Some of the symbolic decorations resembled those of Zúñi; others were similar to those of Peru.

The majority of the dead were cremated, their ashes being interred outside the dwellings. A few, supposed to belong to the priestly class, were buried without cremation and inside the houses. Their graves were found sometimes under the floors, where Zúñi folklore had taught Mr Cushing to look for them; sometimes within the thick adobe walls; sometimes partly under the floor and partly within the wall. Children were often buried under the floors close to the fireplaces for mythic reasons which Mr Cushing explains. It is fortunate for science that all were not cremated.

On the 1st of September, 1887, I arrived in Mr Cushing's camp at *Los Muertos*, for the purpose of looking after his health, which was in bad condition, and to assist him, if necessary, in his work. After my arrival, the first objects which attracted my attention were, naturally, the skeletons. I found them scattered in fragments over the ground, in some cases reduced to dust. They had become very friable from their long interment, and on exposure to air and sunlight soon disintegrated. Besides, air and sunlight had good assistance from vandal visitors who used their boots most successfully to hasten destruction. No effort had been made to preserve the bones up to the time of my arrival. I procured all the paraffine I could buy in Phoenix and Tempe, and did my best, thereafter, to preserve the bones as they were unearthed. After my return to Washington, Dr Jacob L. Wortman, anatomist of the Army Medical Museum, went out to Mr Cushing's camp, well equipped with material for preserving the bones.

I had not been long studying these osseous remains when I became convinced that they were, in many respects, the most unique ever discovered. After they were brought to Washington, they were studied more thoroughly and described in volume VI of the *Proceedings* of the National Academy of Sciences.

Not the least result of the labors of Cushing and the munificence of Mrs Hemenway has been to direct the attention of scholars and capitalists to our southwestern land as a fruitful field of exploration.

There was one great drawback to Mr Cushing's usefulness. His life was too full of eager quest. He rarely rested long enough from his breathless race to tell his tale. "Give! Give!" was the ceaseless cry of the horse-leech's daughters in his heart. I know that much of the information gathered in Salado valley was never written; I know the same of his long investigations in the pueblo of Zuñi. He learned much under conditions which can never be repeated. He bore in his mind the lore of an irretrievable past. Other faithful laborers may follow on his trail—in truth, others have already followed him, yet they cannot recover much that he alone knew and that is now buried with him forever. In many things, his loss to science is irremediable, for

" Who shall lift that wand of magic power,
And the lost clew regain?
The unfinished window in Aladdin's tower
Unfinished must remain."

Remarks by Stewart Culin

My acquaintance with Mr Cushing dates from the spring of 1893, when I met him in Washington and soon after again in Chicago. We quickly became warm friends, finding many interests in common, and being more closely drawn together as the years went on. In Chicago he was engaged in setting up some groups of Zuñi figures at the Exposition; I in arranging my collection of games in the Anthropological building. He perceived the striking analogies existing between the Zuñi games with which he was acquainted and those from eastern Asia in my collection, and insisted upon making examples of the Indian objects for me that I might illustrate directly the curious parallels. The specimens which he then improvised remain among my most

interesting and valued souvenirs of this gifted man. With other exhibits at Chicago which particularly attracted Mr Cushing was one from the cliff dwellings of Mancos cañon, Colorado. He spent much time in studying this collection, and with his knowledge of the existing Pueblos and their traditions made many identifications of this prehistoric material which will prove to be of permanent scientific value.

In the seven years which have passed, Mr Cushing spent much time in Philadelphia. In the spring of 1895, while under Dr Pepper's care, he met Colonel Durnford and soon after started on that expedition to Florida which yielded such amazing results,—results which should give Mr Cushing lasting fame had he achieved naught beside.

It is my pleasure to bear testimony not only of Mr Cushing's services to the cause of science generally, but specifically to the institution with which I am connected. He interested and stimulated those upon whom we depend for financial support, and he left many substantial tokens of his life-work among the collections committed to my charge. Personally, I owe him an obligation not easily expressed in words.

Mr Cushing's chief ideal was perfected knowledge. He was consumed by a desire to know and to understand. He was forever questioning, and, while he despised no source of information, he ever sought his replies in direct personal experiment. Living in the world and of the world he was utterly disregardful of self. His spirit strayed full often. Even now I think of him, not as dead, but only reunited to that wild brotherhood to whom his heart went out.

Letter from Joseph D. McGuire

I find at the last moment that matters over which I have no control will make impossible my presence at the meeting of the Anthropological Society in memory of Mr Cushing, yet I trust

that a few words from me may be recorded as expressive of the loss sustained by Anthropology in Mr Cushing's death.

Principal Dawson, of Montreal, years ago wrote that in order to properly appreciate Stone-age conditions in Europe, one had a better field of studying primitive races and their manner of life in America than elsewhere. Study of primitive conditions almost conclusively demonstrates that throughout the world man resorted to similar methods to support life, and Cushing in his life at Zuni lived as an Indian and studied their life as one would a problem in mathematics. He sat in their councils and learned the traditions of their forefathers. He studied their mythology and familiarized himself with their tools and their uses. Their daily life for years was his own, consequently he was enabled to make clear the Indian method of thought.

During an acquaintance with Mr Cushing extending over a period closely approximating a quarter of a century, I never heard him say an unkind word of any one, but had a pleasant word for all, especially for those who were in any manner studying primitive conditions of the American Indians.

He was about the first who laid bare an aboriginal soapstone quarry where the natives made their cooking utensils. His descriptions of the methods of the manufacture of pottery and of metal-working would entitle him to rank among the greatest of the ethnologists of his period had he done nothing else. He was an expert stone-chipper, and he familiarized the world with certain methods of primitive peoples in stone-fracturing. Had longer life been spared him, doubtless much more would have been heard from him concerning it. Of his work in other fields of ethnology, others are more competent to speak than I.

The Washington school of Anthropology has certainly lost one of its brightest lights. In the going out of his life we have lost a man who was in many respects one of the most original minds among anthropologists; but it must be a comfort to his relations, as it certainly is to his friends, that before he was taken

away his name had been inscribed among those of the brilliant ones who have passed so many years in aiding in the diffusion of knowledge among mankind.

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